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Back To The Top

Ask the Experts about Sepsis
from Medscape Critical Care

Use of Digoxin to Improve Heart Function in Sepsis

Question

I had a patient recently with a leg infection; he became septic. One of the difficult conditions to treat was that he was hypotensive, heart rate 120, arrhythmic, with 3rd heart sound present. Is it advisable to use digoxin on these conditions to improve heart function?

Jesus Baeza Valles, MD

Response from Greg S. Martin, MD
Assistant Professor, Medicine, Division of Pulmonary Medicine, Emory University School of Medicine; Director, Emory Pulmonary Clinic, Grady Memorial Hospital, Atlanta, Georgia

Septic shock is one of the most lethal conditions in the ICU and one of the most difficult to treat. Myocardial dysfunction is universal in these patients, with tachycardia being one of the most common manifestations.[1] Tachycardia may be present for a variety of reasons, including hypotension, fever, and administration of vasoactive substances. In this case, you describe hypotension with tachycardia accompanied by a third heart sound, suggesting left ventricular dysfunction. This may simply be a manifestation of septic shock, or heart failure may have been an independent condition. Whether digoxin is useful in treating this condition is unclear. There is scant evidence regarding the effect of digoxin on cardiovascular performance in patients with septic shock.[2,3] Recognizing the natural bias for publishing positive results, the available literature suggests that digoxin has salutary effects on cardiovascular performance in these patients.[4,5] For septic shock patients with atrial fibrillation, digoxin appears to have no effect on reducing heart rate.[6] There is evidence that diltiazem and amiodarone may effectively control the ventricular response in atrial tachy-arrhythmias,[7] while diltiazem appears to be safe when administered for sinus tachycardia.[8] All of these data are extremely limited and no recommendation can be made based upon this level of evidence. In general, no therapy is recommended for sinus tachycardia in patients with hemodynamic instability or requiring vasopressors, and the specific role of digoxin in treating these patients is unknown.

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Treatment of traumatic and septic shock

Author: Hardaway R.M.[1]

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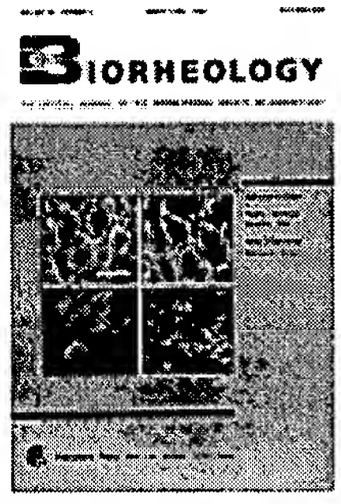
< previous article | next article > | View Table of Contents



Abstract:

Purpose: This study was to evaluate the use of plasminogen activator in the treatment of traumatic and septic shock. Trauma is associated with three types of shock: (1) hemorrhagic, (2) traumatic, and (3) septic. Each type of shock is separate and distinct, but any two or three may occur together. Hemorrhagic shock is associated with blood loss and hypovolemia. Treatment is intravenous blood and other fluids. Traumatic and septic shock are difficult to treat. They are both associated with Disseminated Intravascular Coagulation (DIC) which blocks the microcirculation of any and all organs which may cause Multiple Organ Failure (MOF) and Adult Respiratory Distress Syndrome (ARDS). These micro-clots can be lysed by plasminogen activators. Methods: Nineteen patients with severe traumatic or septic shock were studied. All developed multiple organ failure (MOF) with severe Adult Respiratory Distress Syndrome (ARDS). In accordance with restrictions imposed by the Food and Drug Administration, treatment by plasminogen activator could not be started until at least 48 hours after surgery or trauma and until respiratory therapy with oxygen and PEEP had failed for 24 hours to raise the pA02 to 60 mm Hg. Results: These patients were all in extremis. However, all but one responded to plasminogen activator therapy with a marked and sustained rise in pA02. None bled or had any change in clotting parameters. Conclusion: Traumatic and septic shock are associated with DIC which may occlude the microcirculation of any or all organs causing MOF and ARDS. The microclots of DIC may be lysed by plasminogen activator and circulation to the organs restored thus preventing and treating MOF. No bleeding has occurred.

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BOOK REVIEW

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Septic Shock

Edited by Jean-François Dhainaut, Lambertus G. Thijs, and Gilbert Park. 590 pp., illustrated. Philadelphia, W.B. Saunders, 2000. $120. ISBN 0-7020-1773-6.

Septic shock is difficult to define, difficult to investigate, and even more difficult to treat (mortality rates are greater than 50 percent). For these reasons, septic shock has become the bê te noire of an entire generation of intensive care physicians. This book explores the subject from two broad viewpoints: pathophysiology and clinical management.

The book is multiauthored and has a distinctly Gallic flavor: most of the contributors are from France, and a few are from the Netherlands and the United Kingdom. It contains a wealth of information and is more a reference book on critical care than an account of research in progress. Topics are discussed in detail, and most of the chapters conclude with a brief, useful summary; overall, the thoroughly referenced text is well organized, with frequent highlighted headings and clearly displayed paragraphs. However, there is a paucity of tables and diagrams (and the latter are reproduced in black and white only).

The book has five sections. The first deals with definitions and epidemiology. Concise definitions of the categories of sepsis are clearly outlined in a table. There is a brief discussion of their historical development and the current controversies about categorizing sepsis as separate entities. This section also discusses the increased incidence of sepsis, trends in identified organisms, and risk factors.

The second section, on the pathophysiology of sepsis, is the focus of the book. It gives a detailed account of the various inflammatory mediators in sepsis and the metabolic and